

## **Remarks**

Claims 1-21 are pending in the application. Claim 1-21 are rejected under 35 U.S.C. 101 as being directed toward non-statutory subject matter. Claim 1 is amended to overcome the rejection of the claims under 35 U.S.C. 101 by limiting the subject matter to a practical application. The amendment does not add any new subject matter.

Claimed is a method that begins with an image. Various operations are performed on the pixels in the image to construct a segmented image which is rendered. Figures 4-7 show ten example renderings of segmented images as claimed.

To support the rejection under 35 U.S.C. 101, the Examiner states:

3. Claims 1-21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-21 are drawn to a computer implemented process that merely manipulates data or an abstract idea, or merely solves a mathematical problem without a limitation to a practical application in the technological arts.

In order for a claimed invention to accomplish a practical application, it must produce a "useful, concrete and tangible result" *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601-02 (see MPEP 2106.II.A). A practical application can be achieved through recitation of "a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan", or "limited to a practical application within the technological arts" (MPEP 2106 IVB2(b)).

Applicant quotes MPEP 2106.IV.B.2.(b):

at 296, 30 USPQ2d at 1460. To be statutory, a claimed computer-related process must either: (A) result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan (discussed in i) below), or (B) be limited to a practical application within the technological arts (discussed in ii) below).

and

If a claim does not clearly fall into one or both of the safe harbors, the claim may still be statutory if it is limited to a practical application in the technological arts.

It is clear from this section that statutory subject matter exists when the claimed process (method) either (1) physically transforms something that exists outside of the computer and/or (2) is limited to a practical application in the technological arts. Regarding the claims as amended and contrary to the Examiner's position, both are present in this case.

The first category listed above, physical transformation of objects or activities, includes a safe harbor for processes that manipulate data representing physical objects or activities (pre-computer process activity). Claimed is method for segmenting an image. It is well known in the art that images are acquired by cameras and are generally considered to be a pre-computer process activity. The method converts the input image to a segmented image which is rendered. It is also known in the art that images are usually rendered on a display device or on a tangible medium, such as a piece of paper. Applicant asserts that the segmented images as claimed are

rendered or otherwise outputted, see Figures 4-10. This is clearly a transformation of an outside-of-the-computer object (the input image) to another outside-of-the-computer object (the segmented image) seen in the Figures, see *Arrhythmia Research Tech. v. Corazonix Corp.*, 958 F.2d at 1056, 22 USPQ2d at 1036 (where the data comprises signals corresponding to physical objects or activities external to the computer system, and where the process causes a physical transformation of the signals which are intangible representations of the physical objects or activities); see also *In re Schrader*, 22 F.3d at 294, 30 USPQ2d at 1459 citing with approval *Arrhythmia*, 958 F.2d at 1058-59, 22 USPQ2d at 1037-38; *In re Abele*, 684 F.2d at 909, 214 USPQ at 688; *In re Taner*, 681 F.2d 787, 790, 214 USPQ 678, 681 (CCPA 1982). The images shown are not merely numbers or abstract ideas, but contain pixels measured from real world physical phenomena, e.g., Marilyn Monroe. Figures 4 and 8 show scenes segmented according to sea, beach and shoreline. Figures 5 and 9 segment an image of Marilyn Monroe. Figure 6 and 10 segment an image of two children playing with a ball. Thus, clearly, the invention falls into the first safe harbor.

As is stated above, claim 1 has been amended to claim limitation to a practical application in the technological arts. The claim has been amended to include a step of producing a concrete, tangible and useful result (segmented images). Segmented images are *essential* to many computer tasks, such as object detection/recognition/tracking, to name but a few.

## **Segmentation (image processing)**

From Wikipedia, the free encyclopedia

“In computer vision, segmentation refers to the process of partitioning a digital image into multiple regions (sets of pixels). The goal of segmentation is to simplify and/or change the representation of an image into something that is more meaningful and easier to analyze. Image segmentation is typically used to locate objects and boundaries (lines, curves, etc.) in images.

The result of image segmentation is a set of regions that collectively cover the entire image, or a set of contours extracted from the image. Each of the pixels in a region [is] similar with respect to some characteristic or computed property, such as color, intensity, or texture. Adjacent regions are significantly different with respect to the same characteristic(s).

Some of the practical applications of image segmentation are:

- Medical Imaging
- Locate tumors and other pathologies
- Measure tissue volumes
- Computer-guided surgery
- Diagnosis
- Treatment planning
- Study of anatomical structure
- Locate objects in satellite images (roads, forests, etc.)

- Face recognition
- Automatic traffic controlling systems
- Machine vision”

Thus, the claimed invention also falls into the second category of statutory subject matter under 35 U.S.C. 101.

It is believed that this application is now in condition for allowance. A notice to this effect is respectfully requested. Should further questions arise concerning this application, the Examiner is invited to call Applicants’ attorney at the number listed below. Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account 50-0749.

Respectfully submitted,  
Mitsubishi Electric Research Laboratories, Inc.

By  
\_\_\_\_\_/Dirk Brinkman/

Dirk Brinkman  
Attorney for the Assignee  
Reg. No. 35,460

201 Broadway, 8<sup>th</sup> Floor  
Cambridge, MA 02139  
Telephone: (617) 621-7517  
Customer No. 022199